

# Mineral Industry Surveys

---

For information, contact:

Kim B. Shedd, Cobalt Commodity Specialist

U.S. Geological Survey

989 National Center

Reston, VA 20192

Telephone: (703) 648-4974, Fax: (703) 648-7757

E-mail: [kshedd@usgs.gov](mailto:kshedd@usgs.gov)

JoAnn Sterling (Data)

Telephone: (703) 648-7953

Fax: (703) 648-7975

MINES FaxBack: (703) 648-4999

Internet: <http://minerals.usgs.gov/minerals>

## COBALT IN JULY 1999

U.S. consumption of cobalt during the first 7 months of 1999 was basically the same as that during the same period in 1998, according to the U.S. Geological Survey. U.S. imports of cobalt metal and cobalt contained in chemicals were 10% higher during January through June 1999 than imports during the first half of 1998. Exports of unwrought cobalt and cobalt contained in chemicals during the first half of 1999 were 6% lower than exports during the same period in 1998. Trade data for July 1999 will be available in a subsequent issue.

### Note

With the exception of prices, all data in this report have been rounded to no more than three significant digits. Totals and percentages were calculated by using unrounded data.

### Update

In August, a new way to buy cobalt became available when WMC Nickel Marketing Group began selling its metals on the Internet (Metal Bulletin, 1999). The Cobalt Open Sales System, at <http://www.wmccobalt.com/>, lists the availability and prices of WMC cobalt, information on recent sales, and news items that relate to the cobalt market. In the past, the intermediate nickel-cobalt mixed sulfide produced at WMC's refinery at Kwinana, Western Australia, was sold to Falconbridge Ltd. as feed for its Kristiansand, Norway, refinery. Falconbridge now refines the mixed sulfide and returns cobalt cathode to WMC under a tolling agreement.

In September, the Spectron Group, an independent European energy broker, announced that it was establishing an Internet trading system for cobalt (Spectron Group, 1999). Although still in the development stage, Spectron plans to deal in spot market and forward sales of various grades of cobalt from a variety of sources. Further information can be found on the Spectron Special Metal website at <http://www.specialmetal.com>.

On August 26, the Defense National Stockpile Center (DNSC), U.S. Department of Defense, announced that it had awarded 87

metric tons (191,000 pounds) of cobalt granules and rondelles at a total value of \$3.2 million. The following companies were awarded cobalt: ABS Alloys & Metals of Mexborough, England, Phoenixx International Resources of Carnegie, PA, Sovereign Recycling International of Bettendorf, IA, Tricor Group LLC of New York, NY, and Voss Metals Co. of Rockford, IL (Defense National Stockpile Center, 1999a).

On September 23, the DNSC announced that it did not award any cobalt as a result of bids received on September 22 (Defense National Stockpile Center, 1999b). The September offer was the last offer during fiscal year 1999 (October 1, 1998, through September 30, 1999). DNSC sold 1,960 tons (4.33 million pounds) of cobalt during the fiscal year. This represented 72% of the maximum amount allowable for sale under the Annual Material Plan. The next monthly bid opening for cobalt granules and rondelles is scheduled for Wednesday October 27, 1999. For further information on DNSC's cobalt sales program, please contact DNSC's contracting officer for cobalt, Jennifer Iribarren, at (703) 767-5487.

### Price

Prices for electrolytic cobalt, in dollars per pound, from Platt's Metals Week are listed below.

<u>Week ending</u>	<u>Price range</u>
August 13	19.00-20.00

### References Cited

- Defense National Stockpile Center, 1999a, Stockpile accepts cobalt bids: Fort Belvoir, VA, Defense National Stockpile Center news release, August 26, 1 p.
- 1999b, Stockpile makes no cobalt award: Fort Belvoir, VA, Defense National Stockpile Center news release, September 23, 1 p.
- Metal Bulletin, 1999, WMC puts its Co business on the internet, market improves: Metal Bulletin, no. 8402, August 19, p. 9.
- Spectron Group, 1999, Spectron announces electronic trading system for cobalt: London, Spectron Group press release, September 3, 1 p.

TABLE 1  
U.S. REPORTED CONSUMPTION OF COBALT MATERIALS 1/

(Metric tons, contained cobalt)

Period	Metal 2/	Oxide and other chemical compounds 3/	Scrap	Total
1998:				
January-May r/	1,610	826	1,270	3,710
January-June r/	1,910	981	1,510	4,400
January-July r/	2,230	1,140	1,770	5,130
January-December r/ 4/	3,780	1,950	2,980	8,710
Year p/ 5/	4,240	1,860	3,080	9,180
1999:				
January	308 r/	192 r/	248	748 r/
February	326 r/	156	250	733 r/
March	330 r/	180 r/	255	765 r/
April	303	182	249	734
May	320	153	254	728
June	328	194	248	770
July	324	186	257	766
January-July	2,240	1,240	1,760	5,240

p/ Preliminary. r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes metal powder.

3/ Data may include other cobalt materials.

4/ Data based on monthly reports.

5/ Includes annual reports.

TABLE 2  
U.S. REPORTED CONSUMPTION OF COBALT, BY END USE 1/

(Metric tons, contained cobalt)

End use	1998			1999	
	January- May	January- December 2/	Year p/ 3/	May	January- May
Steel:					
Stainless and heat resisting	16	38	38	3	16
Tool	W	W	96	W	W
Superalloys	1,590	3,770 r/	4,110	339	1,660
Alloys (excludes steels and superalloys):					
Magnetic alloys	313 r/	721 r/	771	65	310
Other alloys 4/	156 r/	375 r/	421	W	W
Cemented carbides 5/	359 r/	843 r/	844	52	297
Chemical and ceramic uses:					
Catalysts	W	W	W	W	W
Driers in paints or related usage	W	W	W	W	W
Ground coat frit	W	W	W	W	W
Pigments	W	W	W	W	W
Miscellaneous and unspecified 6/	1,270 r/	2,960	2,900	269	1,430
Total	3,710 r/	8,710	9,180	728	3,710

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data based on monthly reports.

3/ Includes annual reports.

4/ Includes nonferrous alloys, welding materials, and wear-resistant alloys.

5/ Includes diamond bit matrices, cemented and sintered carbides, and cast carbide dies or parts.

6/ Includes feed or nutritive additive, full-alloy steel, glass decolorizer, mill products made from metal powder, and data indicated by the symbol "W."

TABLE 3  
U.S. REPORTED CONSUMPTION OF COBALT, BY END USE 1/

(Metric tons, contained cobalt)

End use	1998			1999	
	January- June	January- December 2/	Year p/ 3/	June	January- June
Steel:					
Stainless and heat resisting	19	38	38	3	19
Tool	W	W	96	W	W
Superalloys	1,880	3,770	4,110	342	2,000
Alloys (excludes steels and superalloys):					
Magnetic alloys	370 r/	721	771	62	372
Other alloys 4/	188 r/	375	421	W	W
Cemented carbides 5/	429 r/	843	844	53	350
Chemical and ceramic uses:					
Catalysts	W	W	W	W	W
Driers in paints or related usage	W	W	W	W	W
Ground coat frit	W	W	W	W	W
Pigments	W	W	W	W	W
Miscellaneous and unspecified 6/	1,510 r/	2,960	2,900	310	1,740
Total	4,400 r/	8,710	9,180	770	4,480

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data based on monthly reports.

3/ Includes annual reports.

4/ Includes nonferrous alloys, welding materials, and wear-resistant alloys.

5/ Includes diamond bit matrices, cemented and sintered carbides, and cast carbide dies or parts.

6/ Includes feed or nutritive additive, full-alloy steel, glass decolorizer, mill products made from metal powder, and data indicated by the symbol "W."

TABLE 4  
U.S. REPORTED CONSUMPTION OF COBALT, BY END USE 1/

(Metric tons, contained cobalt)

End use	1998			1999	
	January- July	January- December 2/	Year p/ 3/	July	January- July
Steel:					
Stainless and heat resisting	22	38	38	3	22
Tool	W	W	96	W	W
Superalloys	2,200 r/	3,770	4,110	349	2,350
Alloys (excludes steels and superalloys):					
Magnetic alloys	435 r/	721	771	65	438
Other alloys 4/	W	375	421	W	W
Cemented carbides 5/	500 r/	843	844	54	404
Chemical and ceramic uses:					
Catalysts	W	W	W	W	W
Driers in paints or related usage	W	W	W	W	W
Ground coat frit	W	W	W	W	W
Pigments	W	W	W	W	W
Miscellaneous and unspecified 6/	1,970 r/	2,960	2,900	295	2,030
Total	5,130 r/	8,710	9,180	766	5,240

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data based on monthly reports.

3/ Includes annual reports.

4/ Includes nonferrous alloys, welding materials, and wear-resistant alloys.

5/ Includes diamond bit matrices, cemented and sintered carbides, and cast carbide dies or parts.

6/ Includes feed or nutritive additive, full-alloy steel, glass decolorizer, mill products made from metal powder, and data indicated by the symbol "W."

TABLE 5  
U.S. REPORTED STOCKS OF COBALT MATERIALS 1/

(Metric tons, contained cobalt)

Period	Industry 2/ Oxide and other chemical compounds 5/				U.S. Government, 3/ metal
	Metal 4/	Scrap	Total		
1998:					
May	388 t/	194 t/	117 t/	700 t/	15,900
June	409 t/	186 t/	124 t/	720 t/	15,700
July	352 t/	200 t/	120 t/	671 t/	15,400
August	359 t/	236 t/	103 t/	698 t/	15,400
September	355 t/	241 t/	95	691 t/	14,900
October	349 t/	251 t/	96 t/	696 t/	14,900
November	339 t/	260 t/	90 t/	690 t/	14,800
December 6/	338 t/	285 t/	88 t/	712 t/	14,700
Yearend p/ 7/	356	306	89	750	14,700
1999:					
January	357 t/	223 t/	128 t/	709 t/	14,700
February	330 t/	203 t/	128 t/	661 t/	14,600
March	318 t/	195 t/	129 t/	641 t/	14,400
April	316 t/	195 t/	127	638 t/	14,200
May	319	226	129	675	14,100
June	315	213	138	666	13,800
July	343	214	132	689	13,600

p/ Preliminary. r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Stocks reported by cobalt processors and consumers.

3/ Data from Defense Logistics Agency. Includes material committed for sale pending shipment.

4/ Includes metal powder.

5/ Data may include other cobalt materials.

6/ Data based on monthly reports.

7/ Includes annual reports.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF COBALT, BY COUNTRY 1/

(Kilograms, gross weight of material, except as noted)

Period and country of origin	Metals 2/		Oxides and hydroxides		Salts and compounds 3/		Total cobalt content for the month 5/	Cobalt content, year to date 5/ 6/
	Quantity	Value 4/	Quantity	Value 4/	Quantity	Value 4/		
1998:								
June	504,000	\$24,200,000	89,100	\$3,170,000	61,400	\$669,000	584,000	4,130,000
July	487,000	22,600,000	70,200	2,750,000	23,700	250,000	544,000	4,670,000
August	456,000	21,200,000	96,600	3,390,000	12,300	147,000	529,000	5,200,000
September	503,000	21,900,000	109,000	3,860,000	43,400	438,000	594,000	5,790,000
October	550,000	22,500,000	93,400	3,120,000	172,000	1,570,000	663,000	6,460,000
November	524,000	19,200,000	155,000	4,440,000	37,300	397,000	645,000	7,100,000
December	466,000	14,500,000	76,000	1,950,000	174,000	2,430,000	567,000	7,670,000
January-December	6,450,000	284,000,000	1,210,000	41,500,000	1,310,000	13,600,000	7,670,000	XX
1999:								
January	605,000	16,200,000	160,000	3,810,000	70,800	529,000	739,000	739,000
February	528,000 7/	12,800,000 7/	81,100	1,570,000	55,900	430,000	601,000	1,340,000
March	736,000	25,200,000	97,400	2,650,000	33,000	217,000	815,000	2,160,000
April	735,000	23,000,000	129,000	3,720,000	72,200	599,000	847,000	3,000,000
May	514,000	16,200,000	88,500	2,330,000	126,000	931,000	611,000	3,610,000
June:								
Belgium	15,800	843,000	23,400	671,000	--	--	32,700	193,000
Brazil	70,000	1,910,000	--	--	--	--	70,000	168,000
Canada	105,000	2,980,000	--	--	3,210	70,500	106,000	460,000
China	--	--	3,000	72,300	2,000	22,600	3,080	10,200
Congo (Kinshasa)	128,000	4,400,000	--	--	--	--	128,000	517,000
Finland	65,400	1,950,000	72,000	1,740,000	107,000	676,000	146,000	972,000
France	1,430	102,000	2,520	160,000	--	--	3,240	26,000
Germany	2,860	153,000	1,730	139,000	--	--	4,100	36,300
India	--	--	--	--	--	--	--	76
Japan	634	39,200	--	--	--	--	634	16,800
Netherlands	--	--	--	--	--	--	--	5,320
Norway	180,000	5,340,000	--	--	--	--	180,000	891,000
Russia	94,100	3,300,000	--	--	--	--	94,100	417,000
South Africa	500	17,500	--	--	--	--	500	3,510
United Kingdom	--	--	25,600	589,000	40,000 7/	182,000 7/	36,900	150,000
Zambia	135,000	5,160,000	--	--	--	--	135,000	687,000
Total	798,000	26,200,000	128,000	3,370,000	153,000	950,000	940,000	4,550,000

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Unwrought cobalt, excluding alloys; includes cobalt cathode and cobalt metal powder.

3/ Includes cobalt sulfates, cobalt chlorides, cobalt carbonates, and cobalt acetates.

4/ Customs value.

5/ Estimated from gross weights.

6/ Year to date may include revisions to prior months.

7/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census, with adjustments by the U. S. Geological Survey.

TABLE 7  
U.S. IMPORTS FOR CONSUMPTION OF ADDITIONAL COBALT MATERIALS, BY COUNTRY 1/

(Kilograms, gross weight of material, except as noted)

Period and country of origin	Unwrought cobalt alloys		Other cobalt: matte, waste and scrap 2/		Wrought cobalt and cobalt articles	
	Quantity	Value 3/	Quantity	Value 3/	Quantity	Value 3/
1998:						
June	15,600	\$689,000	42,100	\$672,000	13,500	\$836,000
July	15,000	627,000	44,300	560,000	22,900	1,290,000
August	28,700	899,000	59,100	729,000	11,200	709,000
September	39,700	1,550,000	97,100	1,430,000	8,710	682,000
October	72,300	1,860,000	76,700	667,000	8,660	764,000
November	9,710	629,000	250,000	2,360,000	14,900	747,000
December	28,400	1,240,000	14,900	225,000	27,700	901,000
January-December	315,000	11,600,000	857,000	10,800,000	217,000	11,300,000
1999:						
January	23,100	1,300,000	9,610 4/	535,000 4/	18,100	946,000
February	29,400	1,330,000	28,900 4/	826,000 4/	13,000	765,000
March	10,600	740,000	54,500 4/	991,000 4/	29,200	1,020,000
April	50,400	1,670,000	74,100 4/	1,150,000 4/	16,100	651,000
May	40,000	493,000	27,900 4/	539,000 4/	11,200	723,000
June:						
Argentina	--	--	7,560	20,400	--	--
Belgium	1,450	37,000	--	--	3,550	86,500
Canada	382	66,800	4,470	59,700	718	126,000
France	200	3,240	4,930 4/	160,000 4/	1,220	70,200
Germany	--	--	7,820	103,000	958	54,400
Japan	200	15,100	10,300 4/	420,000 4/	5,200	106,000
South Africa	--	--	1,660	22,000	--	--
Sweden	60	6,420	--	--	--	--
United Kingdom	--	--	3,810	70,500	4,550	267,000
Total	2,290	129,000	40,600	855,000	16,200	710,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes other intermediate products of cobalt metallurgy; may include other cobalt-bearing materials from which cobalt is extracted, or from which cobalt-containing chemical compounds are manufactured.

3/ Customs value.

4/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census, with adjustments by the U. S. Geological Survey.

TABLE 8  
U.S. EXPORTS OF COBALT MATERIALS 1/

(Kilograms, gross weight of material, except as noted)

Period	Unwrought cobalt, powders, matte, waste and scrap 2/		Oxides and hydroxides		Salts and compounds 3/		Total cobalt content for the month 5/	Cobalt content, year to date 5/ 6/
	Quantity	Value 4/	Quantity	Value 4/	Quantity	Value 4/		
1998:								
June	60,800	\$2,860,000	56,300	\$1,380,000	26,100	\$238,000	108,000	847,000
July	97,500	4,140,000	39,400	1,190,000	84,000	257,000	146,000	993,000
August	109,000	4,660,000	52,400	908,000	32,700	373,000	155,000	1,150,000
September	127,000	3,480,000	54,400	624,000	40,700	275,000	176,000	1,320,000
October	49,000	2,530,000	61,900	1,150,000	55,100	203,000	107,000	1,430,000
November	64,600	2,670,000	29,700	579,000	25,500	261,000	92,100	1,520,000
December	118,000	3,300,000	30,000	461,000	76,000	281,000	158,000	1,680,000
January-December	1,140,000	43,400,000	533,000	11,300,000	674,000	4,140,000	1,680,000	XX
1999:								
January	25,600	1,090,000	35,100 7/	420,000 7/	11,800	96,500	53,700	53,700
February	56,000	2,320,000	37,200	465,000	9,500	93,500	85,100	139,000
March	78,900	3,210,000	46,200	853,000	47,300	338,000	123,000	262,000
April	105,000	3,840,000	36,600	521,000	38,500	377,000	141,000	403,000
May	240,000	7,040,000	30,600	545,000	11,900 7/	150,000 7/	265,000	667,000
June	109,000	3,530,000	24,100 7/	231,000 7/	7,320	88,300	128,000	796,000

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include other intermediate products of cobalt metallurgy, and unwrought cobalt alloys.

3/ Cobalt acetates and cobalt chlorides.

4/ Free alongside ship (f.a.s.) value.

5/ Estimated from gross weights.

6/ Year to date may include revisions to prior months.

7/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census, with adjustments by the U.S. Geological Survey.

TABLE 9  
U.S. EXPORTS OF WROUGHT COBALT, COBALT ORE, AND CONCENTRATES 1/

(Kilograms, gross weight of material, except as noted)

Period	Wrought cobalt and cobalt articles		Cobalt ore and concentrates	
	Quantity	Value 2/	Quantity	Value 2/
1998:				
June	42,200	\$2,430,000	66,800	\$905,000
July	22,200	1,730,000	25,900	67,600
August	122,000	6,260,000	--	--
September	170,000	5,910,000	454	5,140
October	30,400	2,090,000	--	--
November	46,300	2,800,000	733	47,800
December	36,400	2,130,000	--	--
January-December	667,000	33,900,000	128,000	3,500,000
1999:				
January	24,200	1,480,000	31,400 3/	457,000 3/
February	45,000	2,460,000	14,500 3/	29,500 3/
March	80,000	2,050,000	76,200 3/	94,300 3/
April	54,300	2,410,000	434 3/	3,900 3/
May	40,600	2,170,000	21,900 3/	254,000 3/
June	61,300	3,130,000	10,300 3/	333,000 3/

1/ Data are rounded to three significant digits.

2/ Free alongside ship (f.a.s.) value.

3/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census, with adjustments by the Geological Survey.